



NASA/ESA Conference on Adaptive Hardware and Systems (AHS-2010)

Co-located with DAC-2010



CAS
IEEE CIRCUITS AND SYSTEMS SOCIETY



June 15-18, 2010

Anaheim Convention Center
Anaheim
California
USA



Organized by

National Aeronautics and Space Administration – Jet Propulsion Laboratory (NASA-JPL), USA
European Space Agency (ESA), Netherlands
University of Edinburgh, UK

Supported by

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The NASA/ESA Conference on Adaptive Hardware and Systems (AHS-2010) will be co-located with the 47th Design Automation Conference (DAC 2010) and held June 15 - 18, 2010, Anaheim Convention Center, Anaheim, California, USA. AHS-2010 is technically sponsored by the IEEE Circuits and Systems Society (IEEE-CAS) and is organized in Cooperation with ACM Special Interest Group on Design Automation (ACM-SIGDA).

The purpose of the conference is to bring together leading researchers from the adaptive hardware and systems community to exchange experiences and share new ideas in the field. The conference expands the topics addressed by the precursor series of NASA/DoD Conference on Evolvable Hardware, held between 1999 and 2005. With a broader scope including a variety of hardware and system adaptation methods and targeting more industry participation, the NASA/ESA series started with the AHS 2006 conference held in Istanbul, Turkey, and continued annually with AHS 2007 conference held in Edinburgh, UK, AHS 2008 conference held in Noordwijk, The Netherlands, and AHS 2009 conference held in San Francisco, USA.

Adaptation reflects the capability of a system to maintain or improve its performance in the context of internal or external changes, such as uncertainties and variations during fabrication, faults and degradations, modifications in the operational environment, incidental or intentional interference, different users and preferences, modifications of standards and requirements, trade-offs between performance and resources.

We welcome original contributions in the areas of hardware and software adaptation at different system levels, including novel tools and algorithms for adaptive system design (e.g. adaptation-aware compilers), novel applications of adaptive hardware and systems (e.g. intelligent agent machines), and novel enabling hardware technologies for such systems (e.g. instrumentation platforms, novel reconfigurable and multi-core architectures). We also welcome novel contributions in the areas of adaptive data transmission for telecommunications (e.g. adapting to power limitations, changing environment, and interferences), novel data compression techniques (e.g. new image compression techniques for space applications), and novel software/hardware architectures for unmanned autonomous vehicles (e.g. adapting to extreme environments and mission unknowns).

While the focus of this conference is on communications and space applications, we welcome original contributions in other application areas such as consumer, medical, defence and security, as the techniques employed can be disseminated across the board.

In view of the above, the topics to be covered in this conference include, but are not limited to:

Built-in tuneable structures and automated tuning	Adaptive optics
Automatic/self-calibration	Adaptive antennas
Built-in self-test and self-repair	Adaptive sensing
Design and test of integrated system in nano scale	Adaptive MEMS/NEMS devices
On-chip learning and adaptation	Adaptive interfaces
Adaptive circuits and configurable IP cores	Hardware for adaptive signal processing
Reconfigurable and morphable hardware	Adaptive medical and prosthetic devices
Reconfigurable hardware for space applications	Adaptive wired and wireless networks
Embryonic hardware, morphogenesis	Adaptive hardware/software for autonomous systems
Evolvable hardware	Adaptive flight hardware
Design for adaptive systems	Space applications
Adaptive embedded system	Communications applications
Adaptive control circuits and adaptive flight hardware	MEMS/NEMS energy scavenging devices
Search and optimization algorithms for adaptive hardware	Emerging technologies-Nanoelectronics
Hardware implementations of optimization engines	Reconfigurable computing incl. multi core architectures
Learning and evolutionary algorithms for adaptive hardware	Adaptive wireless for space
Algorithms for exploring design space of adaptive hardware	Secure data and information systems
Adaptive computing and run-time reconfiguration	Adaptive image and data compression
Adaptation with hardware in the loop	Instrumentation platforms

Prospective authors are invited to submit the electronic version of their full paper (i.e. PS, PDF, MSWord) on the conference web site. Papers are limited to 8 pages and should be submitted in single-spaced, double column, 10 point type on a 8.5" X 11" or equivalent paper with 1" margins on all sides. Each submission should contain the following items: (1) title of paper, (2) author name(s), (3) first author physical address, (4) first author e-mail address, (5) first author phone number, (6) a maximum 200 words abstract (7) the text of the paper, and (8) references. Accepted papers will be published in the conference proceedings and made available through the IEEE Xplore.

Questions regarding papers should be addressed to:

Khaled Benkrid
K.Benkrid@ed.ac.uk
Tel: +44 (131) 650 5662

For further information please check the conference web site <http://www.see.ed.ac.uk/ahs2010>, or contact:

General/Technical: Tughrul Arslan
ahs@see.ed.ac.uk
Organizational/Logistics: Diane Reid
diane.reid@ed.ac.uk
Tel: +44 (131) 650 5645 Fax: +44 (131) 650 6554

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Author notification: March 8, 2010
Camera ready manuscript deadline: March 22, 2010